Service Manual

Datascope
NetGuard™

mindray™
NORTH AMERICA

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Service Manual

Datascope NetGuard™

mindray™
NORTH AMERICA

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Foreword

The NetGuard Service Manual is a guide for technically-qualified personnel who perform maintenance and /or repair on the NetGuard System.

The Service Manual conveys system-wide information that is divided into sections. For quick reference, each chapter's title page displays a table of contents that indicates sectionally, the topics covered.

This publication may have been updated to reflect product design changes and/or manual improvements.

NOTE: **Unauthorized servicing may void the remainder of the warranty. Check with the factory or with a local authorized Mindray DS representative to determine the warranty status of a particular instrument.**

Warnings, Cautions and Notes

Please read and adhere to all warnings, precautions and notes listed here and in the appropriate areas throughout this manual.

A **WARNING** is provided to alert the user to potential serious outcomes (death, injury, or serious adverse events) to the patient or the user.

A **CAUTION** is provided to alert the user to use special care necessary for the safe and effective use of the device. They may include actions to be taken to avoid effects on patients or users that may not be potentially life threatening or result in serious injury, but about which the user should be aware. Cautions are also provided to alert the user to adverse effects on this device of use or misuse and the care necessary to avoid such effects.

A **NOTE** is provided when additional general information is applicable.

Warnings

WARNING: Only qualified and trained Mindray DS Patient Monitoring Service personnel or those trained by Mindray DS Patient Monitoring Service should attempt to service this equipment. Service is defined as any activity requiring the cover to be removed for internal adjustments, parts replacements, repairs or software upgrades of any kind to ensure compatibility.

WARNING: To ensure compatibility with the operating system and applications software, use only Mindray DS USA, Inc. supplied and/or approved components to repair any part of the NetGuard™ System. Use of unauthorized software, devices, accessories, or cables other than those approved by Mindray DS USA, Inc. may render the application unsuitable for medical patient monitoring. It may also result in increased electromagnetic emissions or decreased Immunity of the system.

WARNING: To adequately display the software application, it is important to maintain a minimum screen resolution of 1024x768 with 96 dpi.

WARNING: Some of the equipment on the NetGuard Network must utilize the hospital emergency power system. Failure to do so will result in loss of monitoring during extended periods of power failure. The back-up power time period for the NetGuard Network is limited.

WARNING: Changes to the NetGuard server configuration and client PC software should not be performed without the guidance of a qualified service representative.

WARNING: Do not use the NetGuard device in an explosive atmosphere or in the presence of flammable anesthetics or gases.

Cautions

CAUTION: For proper operation use with UL agency approved ethernet cables.

CAUTION: For proper operation, do not use the equipment with a frayed or damaged power cord or ethernet cable.

CAUTION: Do not use a damaged or broken unit or accessory.

CAUTION: For proper operation never place fluids on top of the server. In case of accidental spillage, remove power, wipe clean immediately and have the system serviced to ensure no hazard exists.

CAUTION: The server and client PC for this device must only be setup by qualified service personnel.

CAUTION: Do not block the client PC's speakers. Set the volume levels to ensure that alarms can always be heard.

CAUTION: Speaker volume should be set high enough to hear an alarm above ambient noises.

CAUTION: **To avoid possible interference with other facility devices, use the correct AC cord for all equipment installed on the NetGuard network.**

CAUTION: **It is recommended that password protected screen savers be disabled after the NetGuard client PC software installation. Use of screen savers may degrade the performance of NetGuard software application.**

CAUTION: **It is recommended that the Microsoft® Windows power management features such as power save or hibernation be disabled after the NetGuard client-side software installation.**

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1.0 *Instrument Description*

1.1 Introduction

This section of the service manual provides an overview of the NetGuard System, followed by more detailed information.

1.2 Overview

The NetGuard System is an ambulatory monitoring system that issues alerts automatically to clinicians when it recognizes potentially life-threatening cardiac rhythms in monitored patients. The system monitors patient ECG and heart rate and issues alerts whenever specific arrhythmias are detected or the measured values deviate from acceptable ranges.

The NetGuard System (shown in FIGURE 1-1) consists of the NetGuard devices, a wireless infrastructure, a central server, one or more client PCs, and proprietary software running on the server and client PCs.

The server application collects patient data from the reusable device via ceiling or wall mounted access points. This allows patients to move within the designated areas of the hospital. The NetGuard wireless network is based on ZigBee protocol (802.15.4) which operates in the 2.4 GHz band.

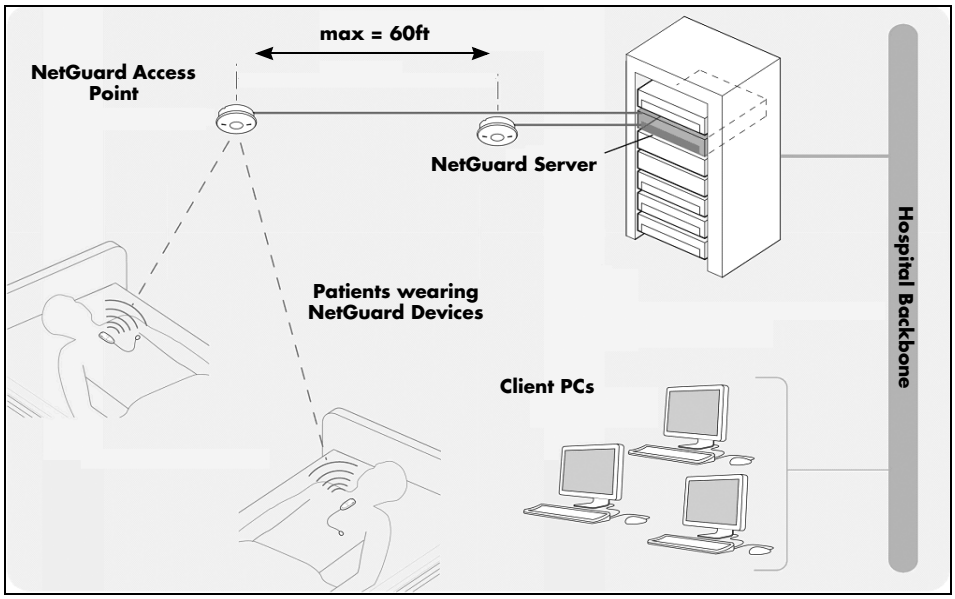


FIGURE 1-1 NetGuard System Overview

1.3 Core Functions

The NetGuard client application displays, records, and recalls patient ECG data (i.e., heart rate, and waveforms). At installation of the system, the following items are setup:

- User Management
- Room Management
- Monitor Group Management
- Alarm Management
- Database Management
- Network / Device Management

In the event of a Lethal System level alarm, a hospital staff member must see the patient to silence the alarm. All other alarms, such as System level heart rate alarms and Technical alarms can be silenced at the NetGuard client application.

1.4 Connectivity

The reusable device is powered when connected to the disposable electrode. Cardiac signals and device status are transmitted wirelessly to access points. The access points are connected via Ethernet cabling to the network switch, and a server. Patient data is processed, and sent to the NetGuard client application.

1.5 Block Diagrams

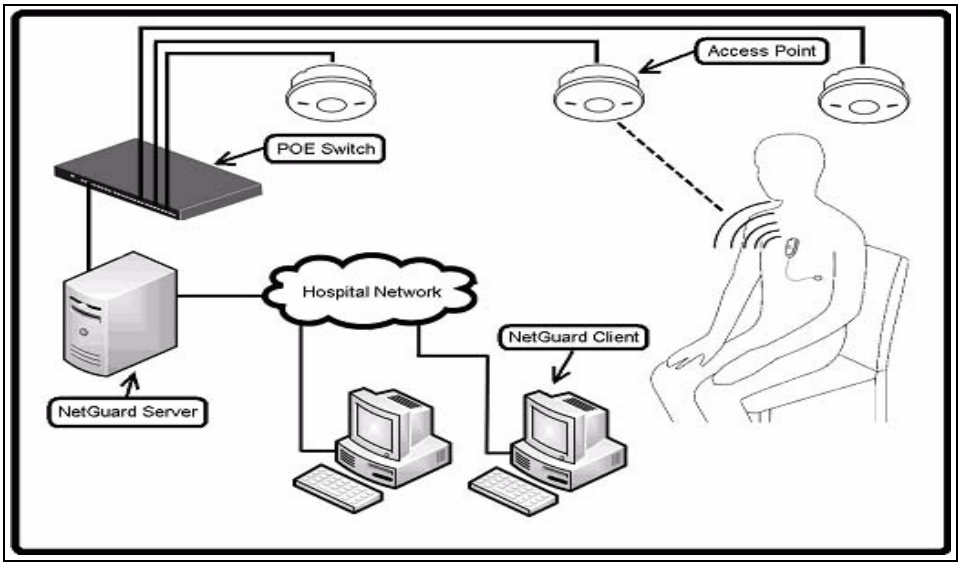


FIGURE 1-2

1.6 System Modules and Components

1.6.1 Patient Worn Device

The patient worn device consists of two components: a disposable electrode and reusable transmitter. The disposable consists of a lead wire set, a coin cell battery, and a receptacle for the reusable. The reusable analyzes the ECG data from the disposable and transmits it wirelessly to the access points.

1.6.2 Access Points

Access points route data between the patient worn device and the server. The reception range of the access point is dependent on the surrounding environment (e.g., wall construction, etc.) and is determined during the site survey.

1.6.3 NetGuard Access Point Switch

The switch connects and powers (PoE) the access points to the NetGuard server and the hospital network.

1.6.4 NetGuard Server Application

The server application receives data from the patient worn devices and stores it in the patient database. This application also distributes the data from the database to the client application.

1.6.5 NetGuard Client Application

The client application runs on designated PCs and supports the following:

- Patient admission and discharge from the system
- Displays alarms and patient heart rate data
- Prints reports and other patient related information

2.0 *Repair Information*

2.1 Introduction

This section provides the necessary technical information to perform repairs to the NetGuard System. The most important prerequisites for effective troubleshooting are a thorough understanding of the system functions. If necessary, refer to the NetGuard Operating Instructions (P/N 0070-00-0678-XX), which describes instrument functions and features in full detail.

2.1.1 Safety Precautions

If any of the instrument covers are removed, make certain to observe the proper anti-static precautions.

2.1.2 Equipment and Special Tools Required

When performing system repairs, the following special tools may be needed:

- Laptop Computer
- Test Device Setup
- Bootstrap Loader
- CAT5E Cable Tester
- PoE Tester
- Wi-Fi Packet Analyzer

Since no repairs are performed to the access points or reusables, other than reprogramming, the previously listed tools can determine the location of the faulty components.

Only trained personnel are responsible for the service of equipment purchased from Mindray DS USA, Inc. If opening the server is necessary, power it down and vacuum any accumulated dust around the fan blades before opening it.

NOTE: The hospital is responsible for maintaining their network components.

2.2 Troubleshooting

Separate the NetGuard components into the following sections:

1. Patient worn devices
2. Access Points
3. Network Rack Components
4. Client PC(s)

During the NetGuard installation process, an NetGuard Installation Verification Document was completed listing all the MAC addresses, IP addresses, Subnet Mask addresses assigned to the access points, server, and client PC(s). Always have a copy available for reference. If a copy is not available, contact a service representative or authorized distributor that installed the system.

Prior to troubleshooting a network problem, verify the following areas:

- Review Site Survey documentation
- All AC and DC power connections are secure.
- All Ethernet cable connections are secure. Verify connection and communication LEDs on the switch. Affected cable runs could be tested with a cable tester for continuity.
- IP addresses for the server and client application
- Equipment assignment for the patient devices at the NetGuard client application
- Refer to diagram in the NetGuard Customer Installation Guide (P/N 0070-00-0686) for LED status.
- View server or PC logs

ISSUE	COMMENTS	SOLUTION
ACCESS POINTS		
Access point LEDs not illuminated	In order for the amber LEDs to illuminate, the green LEDs must be illuminated as they indicate power and are on solid. One of the flashing amber LEDs indicates communication with the reusable. The other flashing amber LED indicates connection to the network. The reusable device Status LED is amber.	Check the switch for the related port and re-seat the cable connector. Check the switch LED for that port to see if the connection is recognized and is communicating. If not, try a different port or reboot the switch.

ISSUE	COMMENTS	SOLUTION
		Verify the switch is a Power over Ethernet (PoE) switch and that it meets the 802.3af standard.
		Re-seat the connector of the cable at the access point.
		Test the cable with a cable tester.
		Replace the access point (refer to the NetGuard Service Installation Guide P/N 0070-00-0687).
No communication between the access point and reusable device	The reusable device Status LED flashes amber.	Verify the LEDs on the access point(s) are illuminated.
		Verify that the reusable device is entered into the Administrative Web Site by device label and MAC address
		Check if there are other reusables connected to the access point and that they are functioning. Also verify that the number of reusables reporting to the access point does not exceed 20 device limit. Refer to the NetGuard Service Installation Guide P/N 0070-00-0687).
		Check that there is sufficient battery power to the reusable.
		Reprogram the device.
		Replace the access point.
		Refer to the NetGuard Operating Instructions (P/N 0070-00-0678-XX) for the power-up sequence.
REUSABLE DEVICE		
Cannot enter the device to the Administrative Web Site	The reusable may not be programmed.	Program the reusable.
The device cannot detect a heart rate.	The Patient LED flashes yellow/amber.	Verify the disposable placement connection.
		Remove the reusable and re-seat in disposable.
		Replace the reusable.
		Replace the disposable and try the reusable again.
No communication between the reusable and the network.	The Status LED flashes yellow/amber.	Verify the green access point LEDs are illuminated.

ISSUE	COMMENTS	SOLUTION
		Verify that the reusable device is entered into the Administrative Web Site by device label and MAC address, and entered correctly. Refer to NetGuard Service Installation Guide, P/N 0070-00-0687).
		Verify that there are other reusable devices connected to the access point and that they are functioning.
		Verify that the number of reusable devices reporting to the access point does not exceed the 20 device maximum.
		Reprogram the device.
		Replace the device.
The Status LED is on solid yellow/ amber.	There is insufficient power for the device.	Re-seat or replace reusable device
	Failed Power On Self Test (POST)	Re-seat or replace reusable device
NETWORK RACK COMPONENTS		
Access point switch indicators are not illuminated and the access points LEDs are not illuminated		Verify the switch is a PoE switch and follows the 802.3af standard.
		Verify power to the switch
		Test Ethernet cable
		Recycle power to the switch.
SERVER		
Client PC states that it cannot communicate with server		Verify the server has not been restarted and sitting at the DOS prompt. If so, select F1.
		Check the Error Logs by opening the C:\Documents and Settings\All User s\Application Data\Datascope\Logs \wdrs_debug.txt file.
The message **"Page cannot be found."** displays.	The IIS is not available.	Load the IIS by doing the following: Select Start > All Programs > Administrative Tools > Services > IIS Admin Service. Select **Restart**, then select **Yes**.
CLIENT PC		

ISSUE	COMMENTS	SOLUTION
NetGuard software will not install.		Verify the PC meets minimum requirements. Refer to the System Requirements and Specifications chapter.
		Note the specific error message and contact technical support.
NetGuard client application is unresponsive or runs slowly		Verify the PC meets minimum requirements. Refer to the System Requirements and Specifications chapter.
		Verify the network meets requirements. Refer to the System Requirements and Specifications chapter.
		Shut down other programs.
Cannot perform "ECG Request"		Go to the Administrative Web Site and verify the access point IP address was entered correctly.
Communication Error message in lower right corner of display.		Verify that the PC is connected to the switch, the switch is connected to the server, and the switch/server is turned on.
		Check the switch LEDs to verify the corresponding ports are illuminated.

2.2.1 Installing the Server Software

1. Verify or set the IP address and subnet mask on the server.

NOTE: **Note these addresses on the Installation Verification Document.**

2. Set the Windows Update according to hospital procedure.

3. Load the NetGuard Server software onto the server following all the steps of the install wizard:

a. Load the NetGuard Server software CD.

b. Go to My Computer and double-click on the respective drive.

c. Run **Setup.exe** from the NetGuard Server install folder.

d. Follow the default prompts and selections except on the Database Server dialog.

- On the Database Server field, change (local) to the server name.
- Verify that **Windows authentication** is selected.

NOTE: If software is being loaded for the first time, leave "Create Database" checked. If updating the software to a new revision, uncheck "Create Database".

e. When the installer finishes, select the option **Yes, I want to restart my computer now.**

f. Enter a reason for the shut down.

NOTE: The system will not shut down until a reason is entered.

g. After the reboot, close the Manage Your Server dialog, if it displays.

4. After the server installation, connect the CAT5e patch cable between the server and the switch.

5. Verify the LED on the switch illuminates/flashes for that port.

6. Telnet to each access point and set/verify the following:

- Firmware revision is correct
- MAC address matches the documentation
- IP address
- Subnet mask

NOTE: Remain in Telnet to change any of the parameters. Refer to the Telnet section of this manual.

7. Enter the Configuration files on the server by navigating to the following: C:\Program Files\Datascope Corp\WDRS\WDRS.exe.config

a. Verify the Alarm Delay is set at 15. If not, delete the number listed and enter 15.

b. Save the file.

Connect your PC to the network switch (change PC IP address to match the server IP address scheme) and ping the server IP address.

2.2.2 Installing the Client PC Software

NOTE: Prior to installing the program, save and close all open applications.

NOTE: Prior to installing the program, close all open applications.

1. Load the CD into the PC's CD drive.

2. Double-click the **Monitor.exe** file to open the InstallShield Wizard.

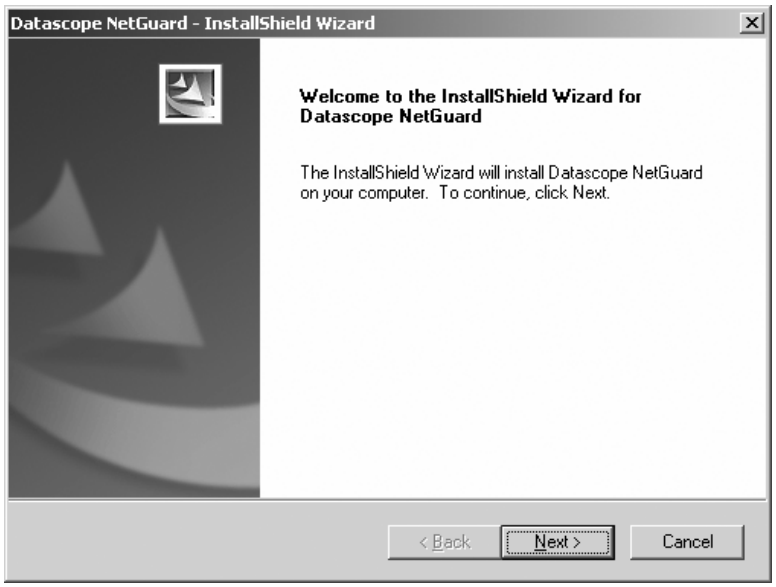

Datascope NetGuard - InstallShield Wizard
Welcome to the InstallShield Wizard for Datascope NetGuard
The InstallShield Wizard will install Datascope NetGuard on your computer. To continue, click Next.
< Back
Next >
Cancel

FIGURE 2-1 InstallShield Wizard

3. Select **Next** to open the Choose Destination Location dialog box. The InstallShield Wizard automatically selects a destination folder on the PC.

- Optional - select **Browse** to change the destination folder.
- Select **Next**. The Configure Monitor window opens.

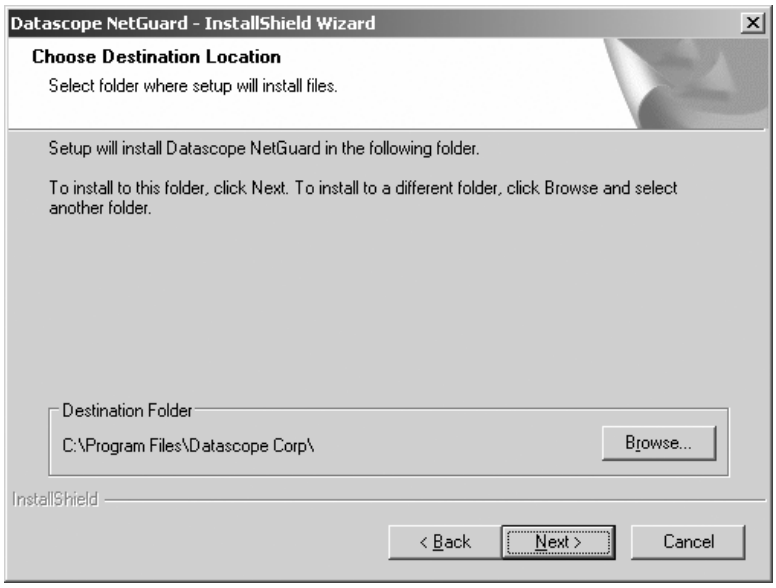

Datascope NetGuard - InstallShield Wizard
Choose Destination Location
Select folder where setup will install files.
Setup will install Datascope NetGuard in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\Program Files\Datascope Corp\
Browse...
InstallShield
< Back
Next >
Cancel

FIGURE 2-2 Choose Destination Location

4. Enter the User Name, Password, and Server name (created during the server installation), then select **Next**.

NOTE: **For security purposes, the password entered will be encrypted.**

NOTE: **The server name can be found in the Pre-Installation Form.**

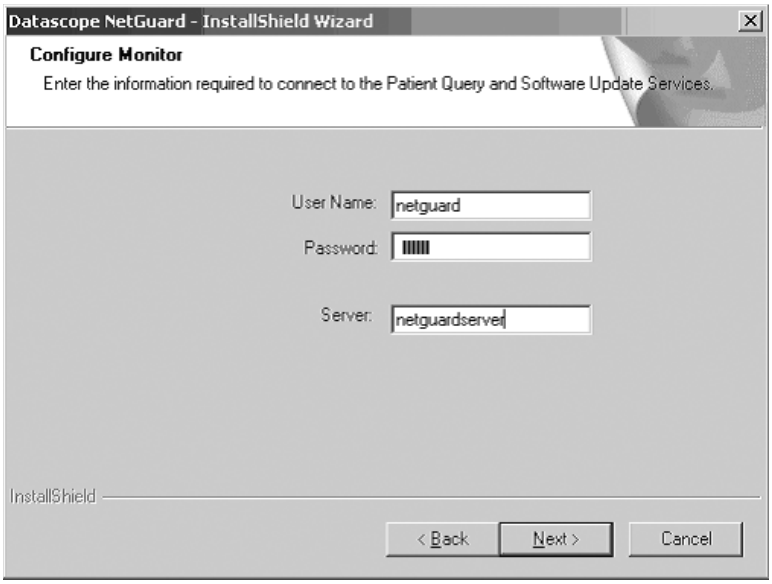


FIGURE 2-3 Configure Monitor

5. Optional - review all of the previous selections/input by selecting **Back**.

6. Select **Install**. The InstallShield Wizard Complete window opens.

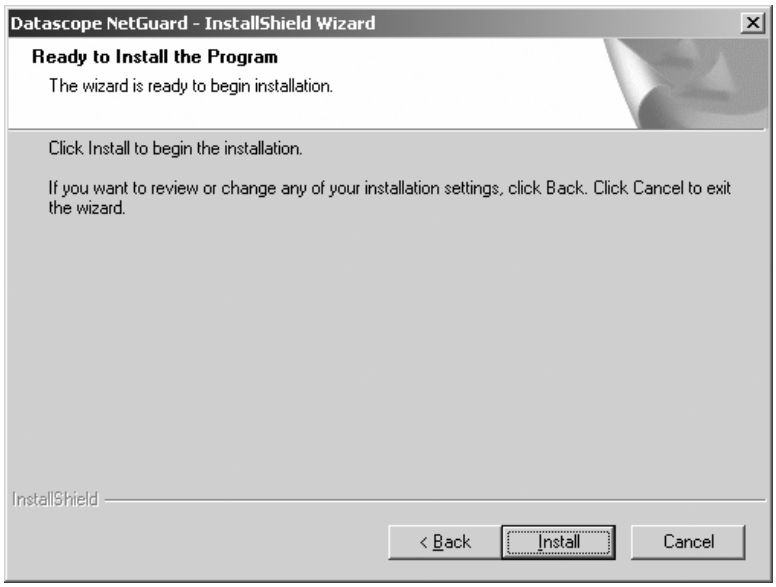

Datascope NetGuard - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

FIGURE 2-4 Ready to Install the Program

7. Verify that the **Yes, I want to restart my computer now.** radio button is selected, then select **Finish**. The PC reboots.

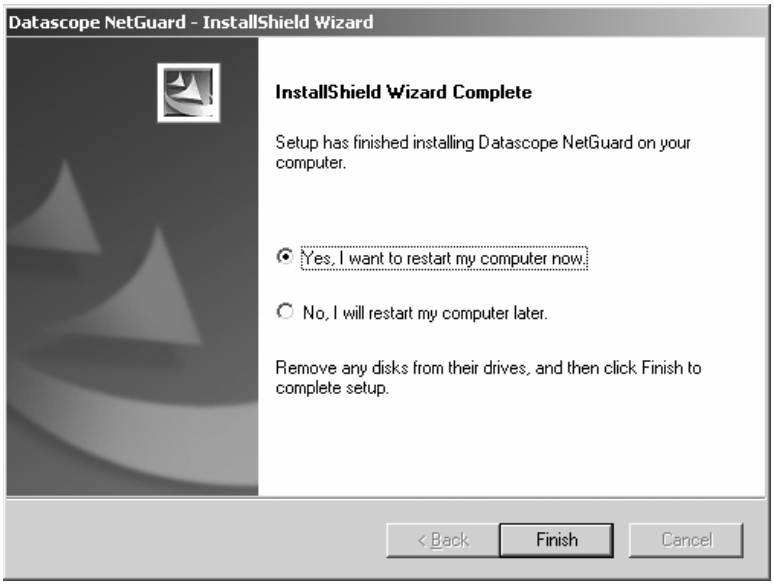

Datascope NetGuard - InstallShield Wizard
InstallShield Wizard Complete
Setup has finished installing Datascope NetGuard on your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

FIGURE 2-5 InstallShield Wizard

8. After a successful MS Windows login, notice the NetGuard icon in the Windows system tray.

9. Double-click the NetGuard icon or right-click the NetGuard icon and select **Show Main Screen** (shown in FIGURE 2-6). The NetGuard application is maximized.

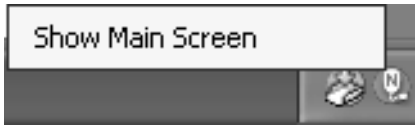


FIGURE 2-6 NetGuard Icon

2.2.3 Programming the Access Points

The access point can be programmed while connected to the network switch or individually.

NOTE: If programming for the first time, be sure to have an IP address scheme designated for the A.P's that will also match the IP scheme for the server.

NOTE: For purposes of instruction, the IP address will indicate 192.168.1.2.

NOTE: These instructions are written as an individual access point is being programmed.

In the NetGuard Installation and Verification Document, fill in the following for the current access point:

- IP address
- Communications MAC address
- Processor MAC address
- Location
- Software version

The PC used for programming will have the Telnet client that has the ability to transmit a text file.

2.2.4 Telnet Instruction

Telnet to the access point to verify the correct IP address, subnet mask, channel, and software revision before you program.

1. Verify the access point is connected to the PoE Switch or PC you are programming from.
2. If connected to the PC, connect the PoE Injector to the access point.
3. Go to the **Start** button, select **Run**, and enter **cmd.**

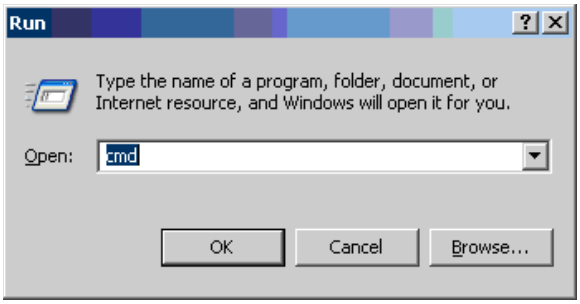


FIGURE 2-7

4. Select **OK**.The Windows\system 32\.cmd.exe window (shown in FIGURE 2-8) appears.
5. After the ">" prompt, enter the word **telnet** followed by the IP address, then press **Enter**.

NOTE: Be sure to have a space between "telnet" and the "IP address". For example: telnet 192.168.1.2.

NOTE: Do not type the command telnet and select Enter. This will bring you to the telnet function which will not allow programming. To exit the telnet function, type exit.

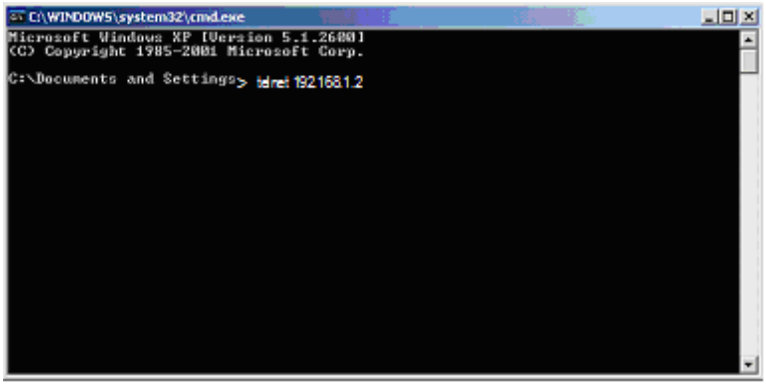

C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.
C:\Documents and Settings> telnet 192.168.1.2

FIGURE 2-8

The Telnet window (shown in FIGURE 2-9) opens as Telnet 192.168.1.2 (or whichever IP address was entered). The information listed is everything needed to know about the access point.

NOTE: **See the list of changeable options further into these instructions.**

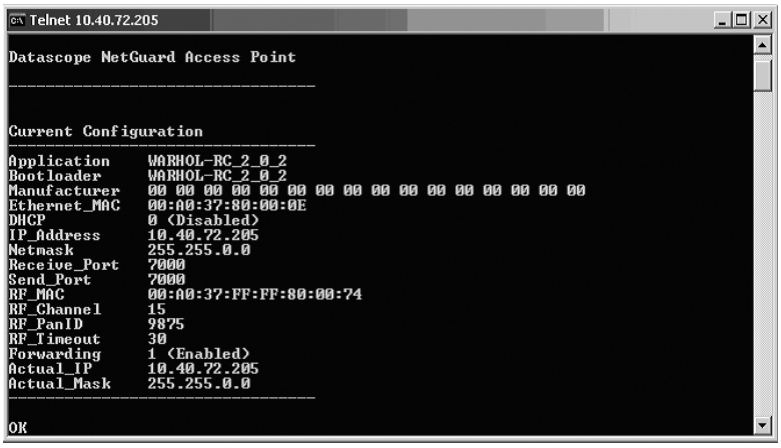


FIGURE 2-9

2.2.5 Program Instructions

After verifying the revision, the IP Address, and Subnet Mask of the access point, enter HyperTerminal to program the access point.

1. Access HyperTerminal by selecting **Start** > **Programs** > **Accessories** > **Communications**. Upon opening HyperTerminal, a Connection Description window displays.
2. Enter a name (suggestion: one that corresponds with the access point new revision) and Icon, and select **OK**. A Connect To window displays (shown in FIGURE 2-10).

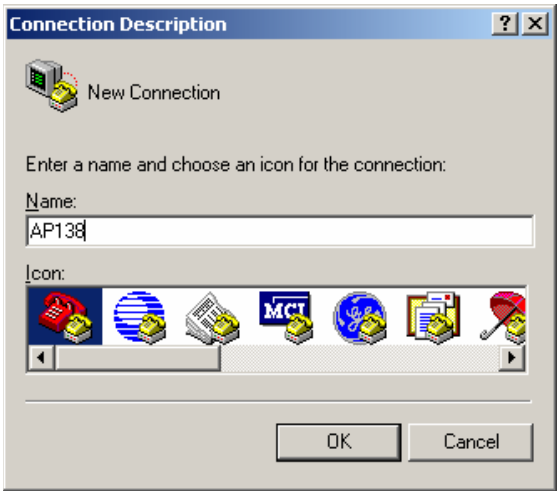


FIGURE 2-10

3. Make the selection for TCP/IP.

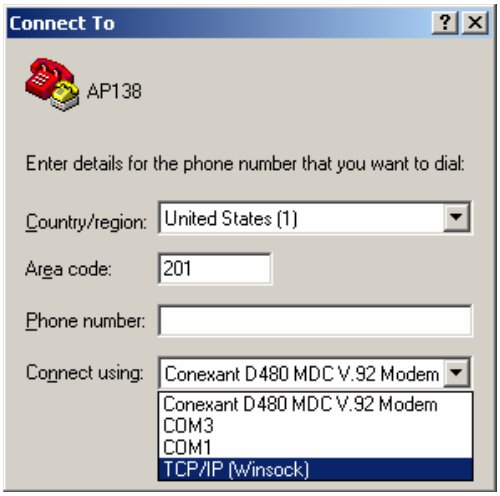


FIGURE 2-11

4. Enter the IP Address of the connected access point, then select **OK**. The "named" HyperTerminal opens (shown in FIGURE 2-13).

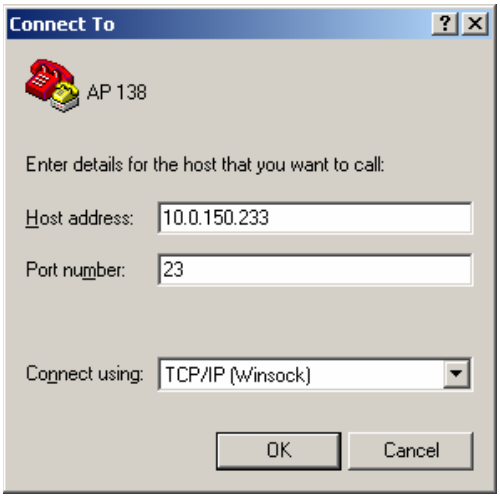


FIGURE 2-12

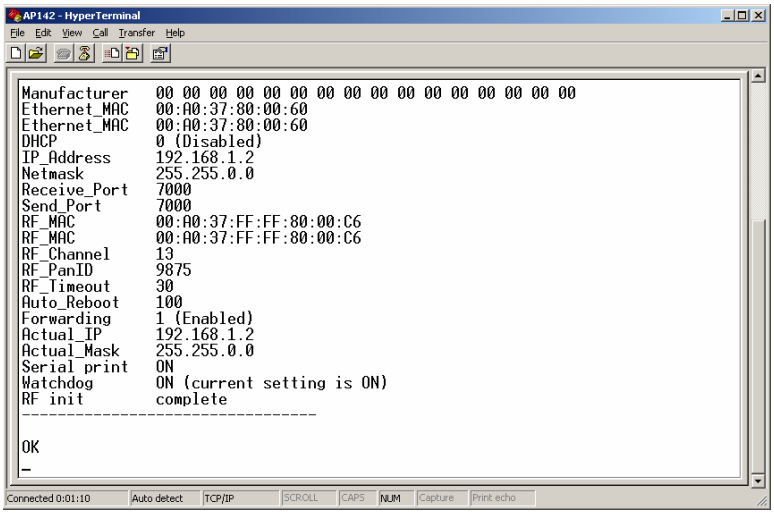


FIGURE 2-13

5. Select **File** > **Properties**, and the **Settings** tab to open the IP142 Properties window.

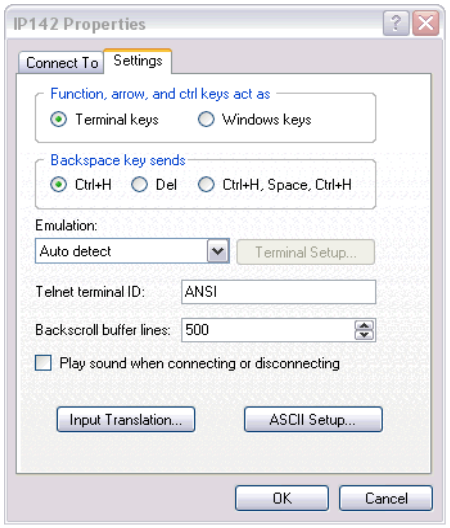


FIGURE 2-14

6. Select the ASCII Setup button and verify that the box for **Echo typed characters locally** is checked. If not, check the box.

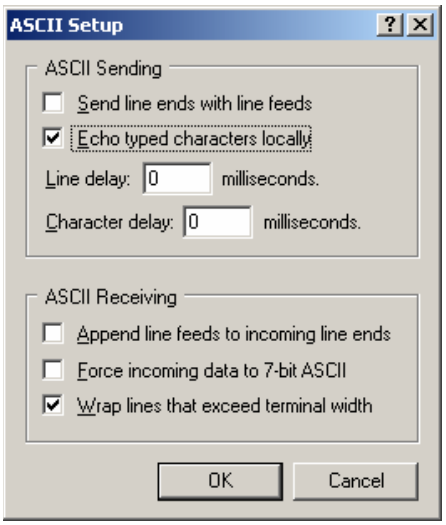


FIGURE 2-15

7. Select **OK**. In the IP142 Properties window, select **OK**.

8. At the OK prompt in the Hyperterminal window, enter the command **upgrade**. The command **Transfer S-record file now, type 'end' when transfer complete. OK** displays.

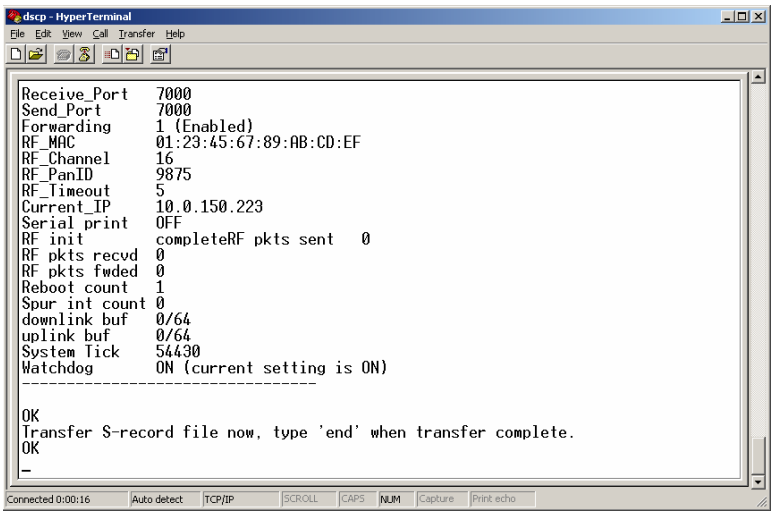
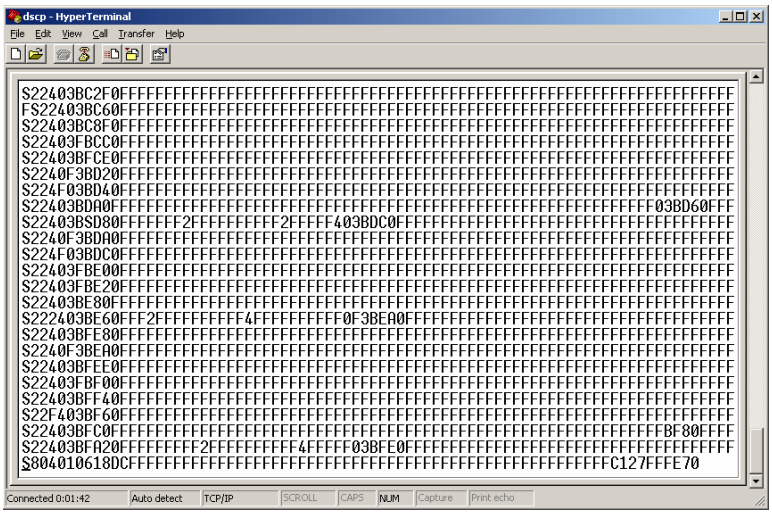


FIGURE 2-16

9. Transmit the file by selecting **Transfer** from the menu bar at the top of the window, then select **send text file**. Find and select the access point program file.

NOTE: **If the file is not a text file, go to Files of Type at the bottom of the window and select "All files".**


dscp - HyperTerminal
File Edit View Call Transfer Help
S22403BC2F0FFFF

NOTE: **Enter these commands exactly as shown using one space between the text and MAC address numbers. The colons are required.**

14. Enter the command **reset**. This may take a few moments as the access point has to reboot power. It is complete when the message **Connection to host lost** displays.

2.2.5.1 Troubleshooting

If the **Unknown command OK** displays, the access point did not program correctly.

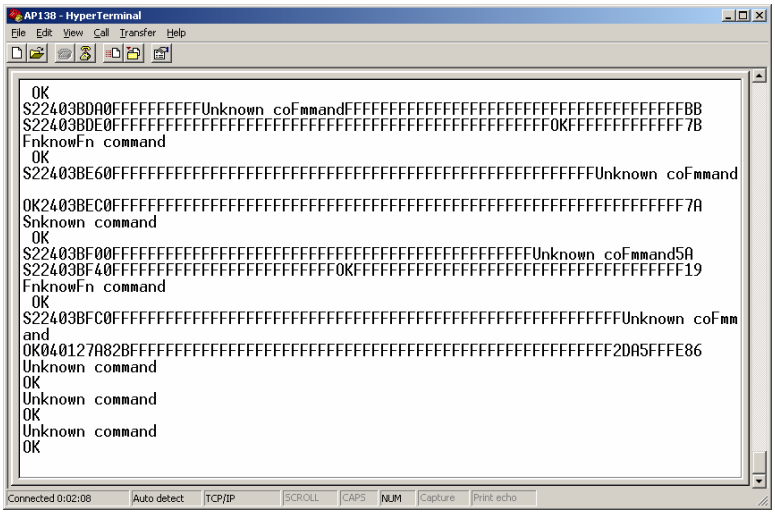


FIGURE 2-19

Select the "disconnect" icon and start over. Check the following:

- PC has the correct IP address
- Type upgrade before Transmit
- Select the correct program file

2.2.5.2 Configurations

The configuration of the access point is accomplished via the maintenance interface. The following parameters may be set:

COMMAND	DESCRIPTION	DEFAULT
AutoReset	Period, in hours, at which the access point should perform an automatic reboot.	Default is 100 hours. A value of 0 means never booted.
DHCP	Shall the access point use DHCP to obtain its IP address (enabled) or shall it use the configured static IP address and subnet mask (disabled)	Default is disabled.
IP_Address	static IP address used when DHCP is disabled.	Default is 192.168.1.2.
Netmask	static subnet mask used when DHCP is disabled	Default is 255.255.0.0

COMMAND	DESCRIPTION	DEFAULT
Receive_Port	UDP port upon which the access point shall listen for packets.	Default is 7000
Send_Port	UDP to which the access point shall direct all Ethernet traffic to.	Default is 7000
RF_Channel	802.15.4 channel upon which the access point will monitor for devices transmitting packets. Valid values are 11-25.	Default is 13.
RF_PanID	802.15.4 PAN Identifier that the access point shall use.	Default is 9875.
RF_Timeout	Duration, in seconds, that an associated device will remain on the access points "Associated Device List" without any RF packets being received from the device.	Default is 30
Forwarding	Shall the access point perform the packet forwarding function (enabled) or not (disabled)	Default is enabled.

3.0 *Replacement Parts*

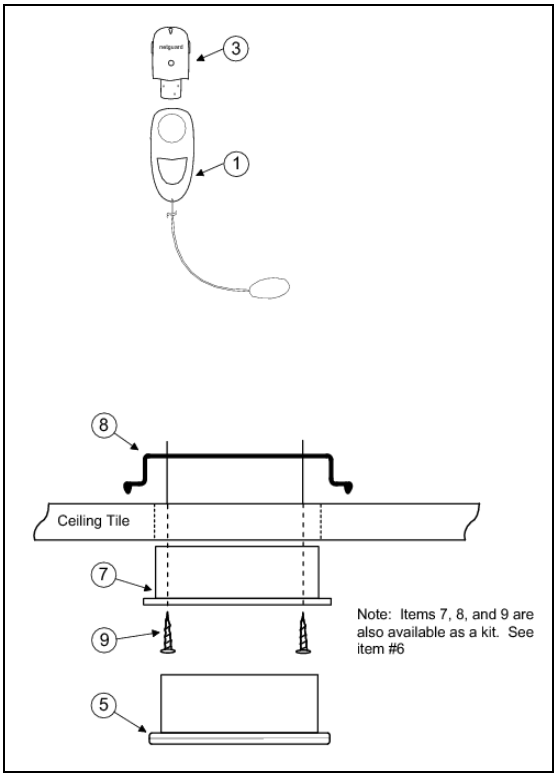


FIGURE 3-1 Replacement Part Diagram

ITEM NUMBER	DESCRIPTION	PART NUMBER
1	Electrode Disposable – Single	0998-00-1200-01
2	Electrode Disposable – 25 Pack	0998-00-1200-25
3	Reusable Device – Single	0998-00-1300-01

ITEM NUMBER	DESCRIPTION	PART NUMBER
4	Reusable Device – 10 Pack	0998-00-1300-10
5	Access Point - Single	0998-00-1400-01
6	Access Point Mounting Kit	0020-00-0163
7	Access Point Mounting Sleeve	0380-00-0538
8	Access Point Mounting Clamp	0386-00-0335
9	Screw, Mach, PanHd, #8-32 x .75"	0212-00-0812
10	Speakers, optional use at PC	0992-00-0107 (Not shown)
11	Switch, 24-port, PoE	Not shown
12	Server, 2.8GHz Dual Core processor or 2.0 GHz Quad Core processor, 70GB HD	Not shown

CAT5 Patch Cables

DESCRIPTION	PART NUMBER
Cable, 6 ft.	0012-00-1274-01
Cable, 25 ft.	0012-00-1274-02
Cable, 50 ft.	0012-00-1274-03
Cable, 1 ft.	0012-00-1274-04
Cable, 2 ft.	0012-00-1274-05
Cable, 3 ft.	0012-00-1274-06
Cable, 10 ft.	0012-00-1274-07

4.0 *System Requirements and Specifications*

4.1 Server - Minimum Requirements

4.1.1 Hardware

- Processor: 2.8 GHz Dual Core processor or 2.0 Quad Core processor
- Memory: 2 GB
- Hard Drive: 70 GB
- Network Interface Cards (NIC): Two available 1Gbps each
- CD/DVD: DVD writer

4.1.2 Software

- Operating System: MS Server 2003, R2 OS, SP2
- .NET Framework 2.0
- Internet Explorer 6.0
- Internet Information Services (IIS 6.0)
- SQL Server 2005, Express/Management Studio or Standard
- NetGuard Server software

NOTE: **Windows updates must be set to manual or managed by hospital IT personnel.**

4.2 Switch - Minimum Requirements

- Enough available 100 Mb ports for all NetGuard Access Points and the NetGuard Server
- PoE (power over Ethernet) capable
- Must accept RJ 45 connectors

4.3 Client PC - Minimum Requirements

4.3.1 PC Hardware

- Processor: Pentium 4, 2 GHz processor or greater
- Memory: 768 MB RAM available for NetGuard, not including OS required RAM
- Capabilities:
  - Play .wav audio files
  - Display 1024 x 768 resolution video at 96 dpi
- Hard disk space available: 55 MB

4.3.2 PC Software

- Operating System: Windows XP Pro, SP2
- Internet Explorer 6.0
- .NET 2.0
- NetGuard Client software

NOTE: Windows updates must be set to manual or managed by hospital IT personnel.

4.4 Mounting Rack (if applicable)

Wall mount or existing 19" rack.

4.5 Cabling

Refer to the Agency Compliance table on page 4-3.

4.6 Cable Connectors

RJ-45 CAT5 connectors are used at each end of the CAT5 cable to allow connections between the access point and client PCs to the network switch and server.

4.7 Power Requirements

The server, PC, and switch are powered by the AC line cords supplied by the component manufacturer. Upon purchase of the components, the user will specify the appropriate power for their geographic location.

Mindray DS USA, Inc. requests that the AC power is connected to a UPS and to the facilities' emergency power system.

4.8 Agency Compliance

Server:	IEC60950, Information Technology Equipment - Safety - Part 1 General Requirements
Client PC:	IEC60950, Information Technology Equipment - Safety - Part 1 General Requirements
Access Point:	IEC60950, Information Technology Equipment - Safety - Part 1 General Requirements
Patient Device:	IEC60950, Information Technology Equipment - Safety - Part 1 General Requirements
Cable:	**NEC/UL Classification:** CMP (Reference: UL Standard 444 / CSA C22.2: Multi-National Harmonized Communication Cable Standards CSA c22.2 No. 214-94 and UL 444) **CEC/cUL Classification:** CMP (Reference: UL Standard 444 / CSA C22.2: Multi-National Harmonized Communication Cable Standards CSA C22.2 No 214-94 and UL 444). **CSA Flame Test Classification:** FT6 **IEC Specification:** 11801 Category 5 **ANSI/TIA/EIA Specification:** 568-B.2 Category 5e (CAT 5e)
Cable connectors:	Complies with ISO 9001:2000

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